CLAIMS:

1. A wafer manufacturing apparatus comprising:

a susceptor (30) including a support (11) for a wafer, the wafer including a topside and a bottom side;

at least one optical fiber (37) connected to the susceptor (30) so that radiation from the bottom side of the wafer can be monitored; and

an optical signal measurer (39) coupled to the at least one optical fiber(37).

2. The wafer manufacturing apparatus according to Claim 1, wherein two optical fibers(37,38) are connected the susceptor(36), a first optical fiber (37 being located near a center of the susceptor and a second optical fiber (38) being located near an edge of the wafer.

3. The wafer manufacturing apparatus according to Claim 1, wherein the optical signal measurer (39) filters an optical signal from the at least one optical fiber (32), converts the filter optical signal into an electrical signal and provides a feedback control signal.

4. The wafer manufacturing apparatus according to Claim 1, wherein the at least one optical fiber (37) is inserted into a hole (35) in the susceptor (30) to access the bottom side of the wafer.

5. The wafer manufacturing apparatus according to Claim 1, wherein the at least one optical fiber (32) comprises sapphire ($A1_2O_3$).

6. The wafer manufacturing apparatus according to Claim 1, wherein the at least one optical fiber(37) comprises quartz (SiO_2).

7. The wafer manufacturing apparatus according to Claim 1, wherein the optical fiber (37) is integrated in a structure that supports the susceptor(30).

8. The wafer manufacturing apparatus according to Claim 1, wherein the susceptor (30) includes a rotating part (31) and a stationary part (32).

9. The wafer manufacturing apparatus according to Claim 8, further comprising a thermocouple (24) or a pyrometer arranged to measure a temperature of the susceptor (30).

10. The wafer manufacturing apparatus according to Claim 8, wherein optical signals from the at least one optical fiber (32) couple to the optical signal measurer (34) via a stationary monitoring device.

11. The wafer manufacturing apparatus according to Claim 1, further comprising a control system that receives the feedback control signal and maintains a constant wafer temperature during a deposition cycle.

12. A method for manufacturing a wafer using an expitaxy process, the method comprising the steps of:

receiving an optical radiation signal from a backside of a wafer;

filtering out a spectrum of the radiation signal for which the wafer is opaque;

converting the filtered radiation signal into an electrical signal; and

controlling a wafer temperature by keeping the electrical signal constant during a deposition cycle.

13. The method according to Claim 12, wherein the receiving step includes receiving first optical radiation

signal from a center of the wafer and a second optical radiation signal from an edge of the wafer.

14. The method according to Claim 13, wherein the controlling step includes keeping the first and second optical radiation signals constant from an onset of the deposition.

15. A method to decrease temperature differences between wafers with different patterns or different thickness of the field oxide or nitride in epitaxial reactors, the method comprising the steps of:

heating a wafer to a deposition temperature at a first pressure;

registering a first radiation signal level from a backside of the wafer;

during a subsequent deposition cycle at a second pressure that is less than the first pressure, controlling a temperature so that a second radiation signal level from the backside of the wafer is substantially equal to the registered first radiation signal level.

16. The method according to Claim 15, wherein the subsequent deposition cycle creates a different pattern or different thickness of a field oxide or nitride on the wafer.

17. The method according to Claim 15, wherein the first pressure is an atmospheric pressure.